November 20, 2008

Via Electronic Filing

Ms. Marlene H. Dortch, Esq.
Secretary
Federal Communications Commission
445 Twelfth Street, SW, TW – A325
Washington, DC 20554

Re: WT Docket Nos. 07-195, 04-356, 07-16 and 07-30 –Written Ex Parte Presentation

Dear Ms. Dortch:

At the start of this proceeding, T-Mobile repeatedly advocated a breathtakingly anti-competitive and technologically biased proposal — that the Commission establish "downlink-only service rules" that would prohibit new entrants from utilizing the AWS-3 band to provide two-way broadband services using Time Division Duplex ("TDD") technologies. Recognizing the complete folly in such a proposal, T-Mobile has sought to disguise the thrust of its original suggestion by advocating a *mandatory* asymmetric pairing of AWS-3 with the J Block. Although T-Mobile has dubbed this proposal as the "broadband maximization plan,"[1] that name is hardly fitting as the plan would prohibit TDD technology – a technology that is spectrally efficient and inherently more suited than Frequency Division Duplex (FDD) technology for the delivery of broadband data services.

TDD is an AWS-3 technology path that has already received a green light from the Office of Engineering and Technology following multiple rounds of testing *that was sought by T-Mobile*. Thus, there is no policy objective that will be achieved by prohibiting TDD and arbitrarily decreasing the technical options available to potential licensees in the AWS-3 band. On the other hand, nothing in the FCC's NPRM or FNPRM record that suggests or even hints at limiting the ability of a licensee to obtain both the AWS-3 and J Blocks and proceed as T-Mobile suggests. Thus, the only thing that the T-Mobile's plan will "maximize" is yet another opportunity for the company to put up a competitive roadblock to further its own pecuniary interests by limiting competition. While in 2007, T-Mobile demanded that M2Z participate in an auction,[2] the U.S. division of the Deutsche Telekom (the world's largest telephone company) is now advocating that M2Z and any other potential licensees may participate in an AWS-3 auction only if they choose a single technology option (asymmetric FDD pairing).

The Commission should see through T-Mobile's "heads we win, tails you lose" strategy. If the empirical testing it sought revealed that TDD in AWS-3 would result in harmful interference to AWS-1 operations, T-Mobile would have asked the Commission to establish rules that prohibit TDD in AWS-3.

[1] *See* Letter from Thomas J. Sugrue, T-Mobile to Marlene H. Dortch, Secretary, FCC, WT Docket Nos. 07-195 and 04-356, (filed November 17, 2008).
[2] *See* Petition to Deny of T-Mobile, Inc. USA, WT Docket 07-16, at 2, (filed March 2, 2007).

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The tests, however, showed no such threat of harmful interference but T-Mobile wants the FCC to arrive at a wholly unreasonable destination — a prohibition against TDD. The reality is that the tests confirm that the FCC need not establish tilted technical rules and can follow the neutral technical precedent outlined in BRS and 700 MHz (as well as the advocacy of AT&T and Comcast in the ongoing WCS proceeding).

In October of 2001, the TDD Coalition expressed concern about the dominance of FDD technology in Commission allocation and assignment decisions when it stated:

> Today, the U.S. terrestrial mobile environment is virtually all FDD. Spectrum is auctioned on a paired basis: one side of the pair for base station transmission, the other side for mobile/portable transmission. The Coalition urges the Commission to consider a more technology-neutral band plan model when allocating spectrum for advanced wireless services. A continuation of rigidly defined, paired bands would unduly favor FDD at the expense of TDD.[3]

Unfortunately, the dominance of FDD continues. In the seven years since the TDD Coalition made its filing, 222 MHz of broadband–capable paired spectrum has been auctioned by the FCC while a paltry 25 MHz of broadband-capable unpaired spectrum has been auctioned. *See* Table 1.

T-Mobile's proposal would attempt to establish a structural solution where one need not exist. Rather than using spectrum that could be the new home of wireless microphones[4] to address the asymmetrical realities of data delivery, the Commission should permit TDD technologies in AWS-3 (as it previously suggested that it would)[5] as TDD is uniquely capable of addressing making AWS-3 useable for broadband. As the TDD Coalition stated:

> TDD technology is particularly well-suited to the high-speed wireless data transmission with which 3G communications systems are associated. This technology enables transmit and receive functions to operate on the same frequency, but at different times on a fixed interval. Because it efficiently matches the way in which data is sent and received, TDD is particularly effective in handling asymmetric traffic. TDD can also be implemented in a way to respond to the time-varying nature of the ratio of asymmetry between upstream and downstream transmission. FDD systems, on the other hand, use two distinct upstream and downstream frequency bands. As such, they are satisfactory for voice transmissions but can result in a reduced efficiency in spectrum usage when the respective volumes of upstream and downstream data traffic differ from the FDD channel design assumptions, or when the ratio of asymmetry varies in time.[6]

It would be nonsensical for the FCC to prohibit the very technology that could most efficiently deal with the asymmetric concerns raised by T-Mobile.

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[3] *See* Comments of the TDD Coalition, ET Docket Nos. 00-258 and 95-18, IB Docket No. 99-81, RM-9498, RM-10024, at 2-3, (filed October 22, 2001) ("TDD Coalition Comments").
[4] *See, e.g.*, Informal Complaint and Petition of The Public Interest Spectrum Coalition at i-ii (filed July 16, 2008)
[5] *See* Service Rules for Advanced Wireless Services in the 1.7 and 2.1 GHz Bands, Report and Order, 18 FCC Rcd 25162, ¶ 46 (2003) (concluding that the Commission would "make every effort to provide spectrum for TDD systems in future allocation and spectrum proceedings.").
[6] *See* TDD Coalition Comments at 3.

Beyond the fact that T-Mobile's proposal is unnecessary, anti-competitive, technologically-biased and inefficient, it is also based on flawed assumptions. First, T-Mobile significantly underestimates the spectrum efficiency advantage enjoyed by TDD technologies. In reality, the use of TDD in AWS-3 offers at least 50% more capacity than what was assumed by T-Mobile in its recent filing. This is because T-Mobile's capacity numbers failed to realistically account for the combined effects of Adaptive Antenna Systems ("AAS"), which enable Spatial Diversity Multiple Access ("SDMA"), and link budget enhancement achieved from use of such advanced smart antenna technology to further increase efficiency by supporting higher-order modulations.

Second, the T-Mobile *ex parte* incorrectly assumes that the 10 MHz of spectrum will serve as guard bands. The amount of spectrum that would be restricted in that manner would be far less than 10 MHz. Moreover, the band edges need not go unused. Rather, those portions of the band still offer the AWS-3 licensee an opportunity to increase capacity (for example, by incorporating the Ofcom band plan where low power Pico-cells would be permitted in the immediately adjacent portions of the band). Simply put, the available spectrum for TDD operations is significantly underestimated in the T-Mobile *ex parte*.

Finally, T-Mobile's proposal adds an additional 5 MHz (2020 -2025 MHz) of J-Block spectrum to their side of the ledger in a manner that skews the capacity comparison in favor of their proposal without allowing for an apples-to-apples comparison in actual spectrum efficiency of the band plans. That factor alone accounts for one quarter of the additional capacity claimed by T-Mobile. When properly considering the three issues above, the advantage in capacity and efficiency shifts in favor of the rules outlined in the *Further Notice* that permit TDD use of the AWS-3 band.

Overall, T-Mobile's recent filing is little more than new clothes for its longstanding effort to unnecessarily make the AWS-3 rules technologically biased. The Commission should reject these arguments out of hand.

Please let me know if you have any questions regarding this submission.

Sincerely,

Uzoma Onyeije

TABLE 1

Broadband-Capable Paired and Unpaired Terrestrial Spectrum Below 3GHz Offered at Auction October 22, 2001 – November 20, 2008 (1,3)

Auction	Year	Band Name	Total Spectrum (MHz)	Paired Spectrum (MHz)	Unpaired Spectrum (MHz)	% of Unpaired (MHz)
73	2008	Upper 700 MHz Band (2)	62	56	6	10%
69	2007	1.4 GHz Band (2)	8	6	2	25%
66	2006	AWS-1	90	90	0	0%
65	2006	800 MHz Air-Ground	4	4	0	0%
55	2004	900 MHz	5	5	0	0%
46	2003	1670-1675 MHz Band	5	0	5	100%
45	2002	Cellular RSA	25	25	0	0%
44	2002	Lower 700 MHz Band	48	36	12	25%
Total			**247**	**222**	**25**	**10%**

Notes:

1. Information developed from FCC Auctions Home Page (http://wireless.fcc.gov/auctions/default.htm?job=auctions_home). According to the information listed there, the FCC has conducted 37 spectrum related auctions since 2001. Spectrum listed on this chart is for new terrestrial spectrum below 3 GHz auctioned between 2001 and 2008 which can be used to deliver high throughput broadband services directly to consumers.

2. Upper 700 MHz Auction had technologically neutral rules that permitted unpaired use of paired spectrum although the auction did not allow for disaggregated bidding on paired spectrum. 1.4 GHz band only had a 2 MHz unpaired allocation but had technically flexible rules permitting aggregation of adjacent paired and unpaired spectrum as well as unpaired use of paired licenses.

3. Additional spectrum auctioned during this period consists of spectrum not useable for wireless broadband or representing the re-auction of previously unsold licenses. Examples of auctions not relevant for this analysis include but are not limited to:

    a. Auction 56: 24 GHz Millimeter Spectrum (requires line of sight, used for backhaul services and not practical for consumer services)
    b. Auction 72, 61, 59, 57, 51, 42, and 40: Narrowband services like AMTS, MAS, 220 MHz band, and Paging Services
    c. Auctions 85, 82, 81, 70, 68, 62, 60, 54, 37 and 32: LPTV, Broadcast Television, FM and AM Radio Services
    d. Auctions 52, 63/53: DBS spectrum and MVDDS Spectrum
    e. Auctions 78, 77, 60, and 49: Re-auction of unsold inventory from previous auctions (all in paired configurations) which do not add to previously auctioned spectrum.

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